

CLAIMS

1. A method for the identification and investigation of a
receptor in target tissue for which a selected vector has
5 affinity, said method comprising:

- i) creating retroviral particles containing a library
of mRNA from the target tissue;
- ii) transfecting a non-adherent cell line which does not
bind with the selected vector by infecting the cells
10 with said retroviral particles;

- iii) adding to the transfected cell line a suspension of
encapsulated gas microbubbles to which the selected
vector is coupled and allowing the microbubbles and
cells coupled thereto to float to the surface of the
15 suspension;

- iv) isolating the microbubble-bound cells at the
surface;

and either

- v-a) lysing the isolated cells, amplifying the
receptor-encoding cDNA therefrom and sequencing
said cDNA; and optionally

- v-b) comparing the thus-obtained sequence data with
gene bank sequence data;

or

- vi-a) culturing the isolated cells; and

- vi-b) investigating affinities of vectors
to the isolated cells.

2. A method according to claim 1 wherein said vector is
30 selected from peptides, proteins, antibodies,
nucleotides, hormones, growth factors, cytokines,
carbohydrates, lipids, therapeutic agents and drugs
acting through receptor-mediated cell entry.

35 3. A method according to claim 1 or claim 2 wherein the

encapsulated microbubbles of step iii) are selected from microbubbles of gas stabilised by a coalescence-resistant surface membrane, a filmogenic protein, a polymer material, a lipid, a non-polymeric and non-polymerisable wall-forming material and a surfactant.

4. A method according to claim 3 wherein said surfactant is selected from one or more phospholipids and one or more lipopeptides.
- 10 5. A method according to any of claims 1 to 4 wherein said gas is a biocompatible gas or gas mixture selected from perfluorinated gases, preferably from sulphur hexafluoride, perfluoropropane, perfluorobutanes, perfluoropentanes and perflurohexanes.
- 15 6. A method according to any of claims 1 to 5 wherein said gas is perfluorobutane and said surfactant is phosphatidylserine.
- 20 7. A method according to any of claims 1 to 6 wherein the microbubbles are removed before or after culturing, said removal is effected by bursting with a technique selected from ultrasonication, pH change or transient application of overpressure or underpressure.
- 25 8. Microbubble-bound transfected cells producible by method steps i) to iv) of claim 1.
- 30 9. Microbubble-bound transfected cells according to claim 8 wherein the microbubbles are of similar size to the transfected cells, preferably the microbubbles have diameters of 1 to 10 um, more preferably 3 to 5 um.

10. Use of microbubble-bound cells according to claim 8 or
claim 9 for the investigation of diseases involving said
receptors.

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